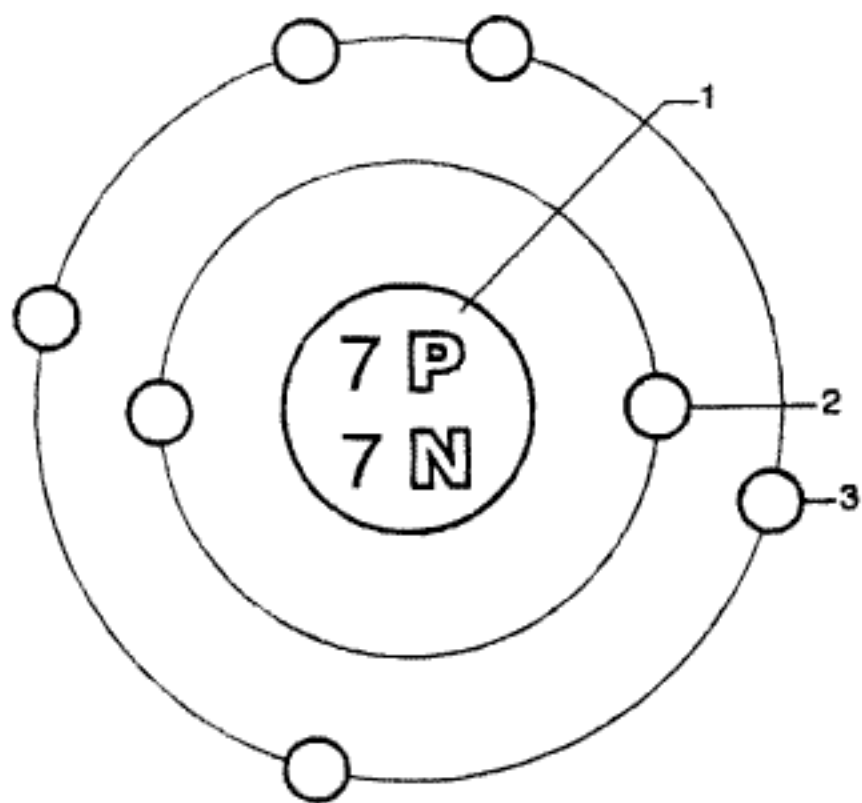


Name: _____

per: _____



Color and label:

○ P (protons)

● N (neutrons)

1. ○ nucleus

2. ○ electrons in first shell

3. ○ electrons in second shell

Figure 2.1. Atomic structure of nitrogen.

Exercise 2.1:

- _____ 1. The nucleus contains _____ and _____ .
- _____ a. Nitrogen's atomic number (number of protons) is _____ .
- _____ b. Nitrogen's atomic mass (number of protons + number of neutrons) is _____ .
- _____ 2. How many electrons does nitrogen have in the first shell? second shell? total?
- _____ 3. Since protons are positive and electrons are negative, an *atom* (as it is shown here) has _____ (a positive charge, negative charge, no charge).
- _____ 4. The first shell can hold a maximum of 2 electrons, the second a maximum of 8. Does nitrogen have a complete first shell? complete second shell?
- _____ 5. The number of electrons in the outermost shell determines the chemical properties of an atom. Therefore, nitrogen would behave most like _____ (carbon with 6 electrons, oxygen with 8 electrons, phosphorus with 15 electrons).
- _____ 6. Atoms are not stable unless their shells are filled with electrons.
- _____ a. Would you expect nitrogen to be stable in the form that it is shown here?
- _____ b. How many electrons would be needed to complete nitrogen's second shell?
- _____ c. If we add electrons to complete nitrogen's second shell, would its charge change?
- _____ 7. Groups of atoms with the same number of protons are called _____ (elements, compounds).